

**TITLE: KEY COLLECTING DEVICE CONTROLLED BY  
PULLING TRANSVERSELY**

**BACKGROUND OF THE INVENTION**

1. Field of the invention

5           The present invention is related to a key collecting device being controlled by pulling transversely, and especially to a key collecting device of which a main-body of a key collecting ring and its related components can be manufactured in a simpler and more convenient way, and loading and detaching of keys in and  
10   from it can be faster.

2. Description of the Prior Art

          In living at home, working at working sites or being on vehicles for going outside in our modern lives, we use various keys; and we carry key collecting devices on our own persons as  
15   necessary articles for the convenience of collecting, tidying and taking keys for use.

          Earlier key collecting devices are comprised each of a twin layer annular ring with a notch in order that keys provided with holes can be inserted onto the twin layer annular ring one by one.  
20   Such conventional key collecting devices are quite troublesome, hard and inconvenient no matter in inserting in or taking out keys.

          As to key collecting devices used in the recent years, taking

the U.S. patent no. 4,584,858 as an example, it largely improved the convenience of use of the key collecting devices. Principally, such a key collecting device existing presently is provided near the center of a disk surface having a peripheral annular groove  
5 with a control knob which links up with an engaging latch provided in the disk. So that the engaging latch normally seals a notch provided in the peripheral annular groove, the notch is opened when the control knob pulls it to retract inwardly. Keys can be connected with a connecting piece with a ball like end in  
10 advance, so that the ball like end of the connecting piece can be mounted in or detached from the disk via the notch. In this way, mounting and detaching of the keys in and from a key collecting device can be faster and more convenient; however, this still has some non-ideal defects. For example, processing of the main disk  
15 includes processing of the peripheral annular groove, a diametrical groove receiving the engaging latch and a surface slot for positioning the control knob, manufacturing of it is more troublesome, time consumptive and cost higher.

And more, the control knob for controlling mounting and  
20 detaching of the keys through the access or the notch normally has a smaller volume and is provided on the disk surface, it is linked up with the abovementioned engaging latch by using a connecting pin extending vertically from the disk surface into the

disk; that is, the engaging latch in the disk normally elastically stretched to seal the access or contracted to open the access is indirectly moved by the control knob provided externally and orthogonally, convenience of its operation is not ideal.

## 5    **SUMMARY OF THE INVENTION**

The main object of the present invention is to provide a key collecting device being controlled by pulling transversely, the device largely simplifies manufacturing of the main body and its related components, thereby loading and detaching of keys in and  
10    from it can be faster.

To obtain the object, the present invention is provided with a main body and a transverse annular ring being orthogonally connected with the main body for collecting and hanging keys; the main body is provided therein with an elastic engaging latch,  
15    and is provided at the central position thereof with a longitudinal central hole extending downwardly from its top for communicating and has a cross-sectional shape in mating with that of the elastic engaging latch, an upper and a lower transverse hole are communicated with the longitudinal central  
20    hole; the aforesaid transverse annular ring is made to have the shape of a ring by bending a metallic rod with a diameter in corresponding with those of the upper and the lower transverse holes, so that the upper and the lower sections thereof can be

extended through the upper and the lower transverse holes respectively; and the upper section is provided at a middle position with an access with a diameter slightly larger than that of the central hole for mounting and dismounting. The elastic  
5 engaging latch is inserted to connect the central hole of the main body, and is provided near the upper end thereof with a control hole to select a state between offsetting from and communicating with the main body; a transverse window is provided beneath the control hole. A positioning sleeve having a solid bottom surface  
10 and an upper opening has its bottom surface abutted against the surface of the lower section of the transverse annular ring extending over the lower edge of the window of the elastic engaging latch, so that a spring can be placed into the positioning sleeve from the upper opening of the latter; the upper  
15 end of the spring can be abutted against the upper edge of the window, while the lower end of the spring can be abutted against the inner bottom surface of the positioning sleeve.

The present invention will be apparent in the novelty as well as the features thereof after reading the detailed description of  
20 the preferred embodiments thereof in reference to the accompanying drawings.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a perspective view of a preferred embodiment of

the present invention;

Fig. 2 is an analytic perspective view showing the elements of Fig. 1;

Fig. 3 is a schematic sectional view taken from Fig. 1  
5 showing a locking state;

Fig. 4 is a schematic sectional view like Fig. 3 showing an opening state;

Fig. 5 is a sectional view taken from Fig. 1 in a direction orthogonal to that of Fig. 4; and

10 Figs. 6-8 are schematic perspective views showing process flow charts of the present invention.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to Figs. 1-3, in the preferred embodiment shown, the key collecting device of the present invention has a main  
15 body 10, a transverse annular ring 20 for collecting and hanging keys is orthogonally connected with the main body 10, the main body 10 is provided therein with an elastic engaging latch 30.

The main body 10 is provided at the central position thereof with a longitudinal central hole 11 extending downwardly from  
20 its top for communicating, an upper hole 12 and a lower transverse hole 13 respectively at the two lateral sides of the main body 10 are communicated with the longitudinal central hole 11. In this preferred embodiment, the longitudinal central

hole 11 is provided on its top end with a flaring truncated conical hole 14 for convenience of pressing the elastic engaging latch 30 with a finger of a user through this flaring truncated conical hole 14. The lower transverse hole 13 can be mated with a lower  
5 arciform surface 34 of the transverse annular ring 20.

The transverse annular ring 20 being connected transversely with the main body 10 can be shaped by bending a metallic rod with a diameter in corresponding with those of the upper and the lower transverse holes 12, 13, so that an upper and a lower  
10 section of the transverse annular ring 20 in an elongate elliptical shape can be extended through the upper and the lower transverse holes 12, 13 respectively. In this embodiment, the main body 10 of the transverse annular ring 20 simultaneously forms at the two lateral sides thereof two ring parts for  
15 collecting and placing keys simultaneously. And the upper section is provided at a middle position with an access 21 with a diameter slightly larger than that of the central hole 11 for mounting and dismounting.

The abovementioned elastic engaging latch 30 can be  
20 inserted to connect the central hole 11 at the middle position of the main body 10, and is provided near the upper end thereof with a control hole 31 to select a state between offsetting from and communicating with the main body 10; a transverse window

32 is provided beneath the control hole 31, and a positioning post 33 is extended down a small distance from the upper edge of the window 32.

A positioning sleeve 40 having a solid bottom surface and  
5 an upper opening has its bottom surface abutted against the surface of the lower section of the transverse annular ring 20 extending over the lower edge 34 of the window 32 of the elastic engaging latch 30, so that a spring 50 can be placed into the positioning sleeve 40 from the upper opening of the latter; the  
10 upper end of the spring 50 can be slipped over the positioning post 33 and abutted against the upper edge of the window 32, while the lower end of the spring 50 can be abutted against the inner bottom surface of the positioning sleeve 40.

The lower section of the transverse annular ring 20 can  
15 thereby extended through the lower transverse hole 13 of the main body 10 and can be abutted against the inner bottom surface of the positioning sleeve 40 when in a normal closed state (as shown in Fig. 3), the positioning sleeve 40 thereby can be raised for a set distance, so that the inner spring 50 is elastically  
20 pressed. And thereby the access 21 of the upper section of the transverse annular ring 20 extended through the upper transverse hole 12 of the main body 10 is offset away from the control hole 31 of the elastic engaging latch 30 to form a closed state to allow

the two ring parts of the transverse annular ring 20 at the two lateral sides of the main body 10 to be used for collecting and placing keys (not shown).

When the elastic engaging latch 30 in a closed state disclosed above is pressed down with a finger of a user through the flaring truncated conical hole 14 to move the control hole 31 of the elastic engaging latch 30 to a position in communicating with the upper transverse hole 12 of the main body 10 (i.e., they are at an identical horizontal center line), the transverse annular ring 20 can be pulled transversely out of the main body 10 at the access 21 (as shown in Fig. 4); now it is in an opened state, and the keys can be mounted into the key collecting device or can be taken out of the key collecting device.

The opened state mentioned above is restored to the original closed state by elastically moving back the elastic engaging latch 30 by an elastic restoring force of the inner spring 50 itself when the transverse annular ring 20 is pulled transversely back to its original position to be at the same vertical center line with the central hole 11 at the access 21.

As shown in Figs. 6-8, the present invention can have a metallic rod 200 with a set length and a set diameter extended in advance the lower transverse hole 13 of the main body 10 and the spring 50 having been placed in the positioning sleeve 40 to



make the bottom surface of the positioning sleeve 40 abut against the surface of the lower section (as shown in Fig. 6); then the two ends of the metallic rod 200 are subjected to a bending process (as shown in Figs. 6, 7), thus the entire metallic rod 200  
5 is formed an elongate elliptical shape as shown in Fig. 8, and the main body has at the two lateral sides thereof two ring parts for mounting and dismounting keys.

The improved structure of the present invention needs only the accessories of a positioning sleeve and a spring by the fact  
10 that the main body 10 is structurally simple, the material for the rod to form the annular ring is easy for processing, so that the entire key collecting device can be faster in manufacturing in a factor, this renders the present invention suitable for mass production to lower the cost of production, and this is the most  
15 evident feature of the present invention. And more, the annular ring for hanging keys can allow opening and closing of the entire key collecting device in a transverse pulling action more easily, operation of it is more smooth and convenient.

The embodiment described is only for illustrating the present  
20 invention, and not for giving any limitation to the scope of the present invention. It will be apparent to those skilled in this art that various modifications or changes made to the elements of the present invention without departing from the spirit of this invention shall fall within the scope of the appended claims.